meets with the Siberian Great Horned Owl, Ust-Urt, Russian and Eastern Turkestan, and the Pamir. Skins of *B. turcomanus* obtained near Irkutsk and Kultuk were received by us from the late Mr. Shvedov. It is probably the same species of Great Horned Owl which inhabits Tibet and the highlands of Persia.

The north-western limit of the breeding-range of *Bubo turcomanus*, between the Lower Volga and Upper Ural, is still unknown. Probably the ranges of the two species overlap in that country.

SCOPS GIU.

The Scops Owl is commonly distributed in South-eastern Russia; it is rare in the southern and south-western portions and is very local in the central governments.

It breeds commonly in the forests of the Southern Ural, and in the outlying spurs between the Sakmara and Tandyk rivers; it is not uncommon in the forests near the Ural river and the Lower Volga, but is very rare near Astrakhan, where it is said to be a resident.

We do not know any thing of its distribution in the Governments of Ekaterinoslav and Kherson, nor of its breeding-range in the Governments of Kursk, Chernigov, and Smolensk; but it is a very common resident in the Crimea, and it breeds in Bessarabia, the Government of Kiev, the Government of Orel, the southern portion of the Government of Tula, and probably in the district of Laraisk in the Government of Riazan. According to Mr. Taczanowsky it is a rare resident in Poland and Lithuania.

During migration this bird is very common near Guriev (at the mouth of the Ural river).

XXIII.—*Notes on the Breeding-habits of certain Sea-Birds frequenting Norfolk Island and the adjoining Islets.* By W. M. CROWFOOT, M.D.

FOR the following notes I am indebted to my friend Mr. P.

Metcalfe, Resident Medical Officer at Norfolk Island. The skins of the Terns which accompanied the eggs were kindly identified for me by Mr. Saunders, the Petrels by Mr. Salvin, and the other birds by Mr. Sharpe.

ANOUS STOLIDUS (Linn.). Noddy Tern.

This bird breeds on Philip and Nepean Islands and the adjacent rocks. Philip Island is a small uninhabited rocky island lying about four and a half miles S.S.E. of Norfolk Island. Nepean Island, also lying to the S.S.E. of Norfolk Island, and half a mile distant from it, is a flat barren rock covered with sand. The Noddies begin to lay about a month after the Sooty Terns, *i. e.* in October; though a few eggs may be found earlier. The eggs are not laid in large colonies, but here and there, in convenient spots, all over the island. The Noddy always makes some kind of nest; I have seen it made of dry grass, bits of sea-weed, dry sticks or twigs, and fish-bones. As a rule, there is nothing but a basement made. The material is merely laid in a heap, as it were, in a shallow hollow, and the egg, only one, is laid thereon. In one instance I found a considerable attempt at building a nest on the top of a dead tree-stump, about 3 feet from the ground; it consisted of a mass of grass, twigs, and sea-weed, but there was no interweaving of the materials, and it resembled the base of a common English Blackbird's nest after the nest itself has been taken and the foundation left. The bird was sitting when I saw it. Noddies' eggs vary very little in appearance and size: the yolk is bright yellow. The breeding-time lasts from the beginning of October till January. The eggs may occasionally be obtained till the end of that month, but the greatest number are laid in October and November. The nests may be placed on sand, rock, tree-stumps, or grass; but sandy spots are the ones most frequently selected. I have never seen more than one egg in a nest.

ANOUS MELANOGENYS, G. R. Gr.

The smaller Noddy Tern is called by the Norfolk-Islanders the "Titissack," from the noise it makes. This bird breeds on Norfolk and Philip Islands, but not on Nepean Island, as there are no trees there. It makes a beautiful slightly cupped little nest of fresh sea-weed, which it firmly cements to the bough of a tree. The nests are placed all along the boughs, sometimes six or more on the same bough a short distance apart, and in the forks as well. One egg only is laid in each nest. The birds are very tame, and may be taken off their nests, though they strike hard with their bills at intruders. The larger Noddy and the Sooty Terns, on the other hand, will not allow themselves to be taken off their eggs, nor can they be caught, though they come so near as to be readily knocked over with a stick or stone. The eggs of *A. melanogenys* vary but little; they measure 1·75 inch by 1·25, and much resemble Noddies' eggs in colour and markings. The tree on which I have always seen the nests of this bird placed is the white oak (*Lagunaria patersoni*). I have seen them on small trees growing on the coast, a few feet above the sea, and fully exposed to the wind; but the site usually chosen is a sheltered valley about half a mile from the sea.

ANOUS CINEREUS, Gould.

These Grey Terns, called by the Norfolk-Islanders the "Little Blue Petrel," are fairly numerous during the breeding-season. They lay their eggs on Philip and Nepean Islands and the neighbouring rocks. The eggs are usually placed on inaccessible ledges, but often on the sand, sometimes not many feet above the sea, but usually at from 80 to 2000 feet. They make no attempt at a nest, and lay only one egg, which is the most easily broken of all the sea-birds' eggs found on these islands. The eggs much resemble those of the other species of Noddy, but the ground-colour is rather darker, and the spots are numerous, small, and more generally distributed over the whole surface than in the eggs of the other species. They measure on an average 1·6 inch in length by 1·12 in breadth, and vary but little either in size or in markings. These birds do not, as a rule, lay in colonies, but here and there, like the larger Noddy, though sometimes one comes across a number close together on the sand. The nestlings are almost of the same colour as the parent birds. These Terns are not tame, and cannot be taken off the nests like *A. melanogenys*. I have taken the eggs as early as the 26th of September, but I think they begin to lay sooner, and I found an egg incubated on Philip Island on June 15th, so that the breeding-period extends from September to January for certain. The birds frequent these islands all the year round.

STERNA FULIGINOSA, Gm.

The Sooty Tern, or "Whale-bird" of the islanders, is the commonest sea-bird here. It commences to lay in September, and breeds in colonies, generally on the sand. The eggs are sometimes laid so close to each other that one can hardly walk between them; they are also laid on ledges of rock, but generally near the water. On Philip Island there is a bit of sandy beach which is always covered with these birds. Occasionally one sees an attempt at a nest, such as a few twigs or dry grass in a little heap under the egg; but generally they are placed on the bare sand. One egg only is laid. These eggs vary greatly, both in size and colour. On an average they measure 2·1 inches by 1·4, but two specimens, which were distinctly double-yolked, measured 2·5 inches by 1·55. A few specimens out of a series of nearly one hundred are white, with a faint tinge of green, and without any spots or markings of any kind; but most of them are richly marked with reddish-brown spots and blotches. The yolk is of a deep red colour, and this character will always serve to distinguish these eggs, when fresh, from those of the Noddy Tern, of which the yolk is bright yellow.

GYGIS CANDIDA (Gm.).

The "Little White Sea-bird" of the Norfolk-Islanders is a very interesting bird. It is said in some places to breed in colonies, but it certainly does not do so here. It lays its egg on trees, and here and there one finds two or three trees occupied in the same valley. I have seen eleven trees used in one locality; but I never saw two eggs on one tree, though

I have seen them on adjoining trees. The egg is laid on the bare branch, sometimes in a slight depression or against a piece of roughened bark; once I have seen it in a fork. Generally it lays its egg on an outstanding branch, and balances it in a truly wonderful manner. There is not a trace of a nest, and often not even of a depression. One egg only is laid. I have seen it placed on a branch about 20 feet from the ground, and also at a height of 60 feet or more; 30 to 40 feet is, perhaps, the average height at which it lays. It always chooses a sheltered situation, generally in a valley, and at a variable distance from the sea, from 300 to 800 yards in the cases I have seen. Year after year this bird lays on the same tree, on the same branch, aye, and on the same spot on the branch. There is one tree where I have seen the old bird sitting once last year and twice this year, for I got both eggs. The first I took on the 27th of December, 1883. It was incubated. The second was all but quite fresh on the 25th of January, 1884. In four other trees I have also found eggs on the same spots as I found eggs or young birds last year. These Terns are very tame, and in one case we lifted up the bird to take the egg. It is interesting to watch the careful way in which the old bird gets off her egg when going to fly. The young birds are very comical-looking little objects. I have found the eggs on three different kind of trees, viz. the white oak (*Lagunaria patersoni*), the iron-wood (*Notelæa longifolia*), and the blood-wood (*Baloghia lucida*). How do the eggs and young birds keep on in windy weather? In November 1882 I was looking for a specimen to send to you, and seeing one on a tree, I shot it. I was sorry to see, when it fell, that a young one was under it. However, this year I found another bird sitting on an egg in the same spot. I took the egg, and four weeks afterwards I went back and again the bird was sitting on another egg, which I also took. I am told that this bird nests extensively on banyan-trees in Pitcairn's Island. The eggs vary in length from 1·62 inch to 1·87, and from 1·17 inch to 1·40 in breadth. They are oval in shape, and generally large at both ends. The ground-colour varies from creamy white to buff. They have underlying markings of a grey colour, and are streaked and blotched with light and dark brown. They somewhat resemble in colour some varieties of the eggs of the Stone-Curlew.

PHAETON RUBRICAUDA (Bodd.). The Tropic-bird.

This bird breeds on Norfolk Island, Nepean Island, and Philip Island, but the last-mentioned island is its principal resort, and here it may be counted by hundreds. It lays its single egg on ledges of rock, in cracks of the cliffs, under overhanging boulders, and in such-like situations. The bird defends its egg with its strong beak, and may be easily caught on the nest. On Norfolk Island the eggs are difficult to get, but on Philip Island they may be readily obtained. The young Tropic-bird is a curious-looking object, being completely covered with thick snow-white down. The eggs vary in length from 2·65 inches to 2·85, and in breadth from 1·75 inches to 2·16. They have a reddish-brown ground-colour, and are covered all over with fine dark reddish and violet-brown markings. Some have the colouring-matter apparently partially washed off.

PUFFINUS SPHENURUS, Gould.

This Petrel, called by the Norfolk-Islanders "Mutton-bird" or "Ghost-bird," from its child-like cry at night, lays its egg on Norfolk, Philip, and Nepean Islands. Its breeding-period extends over a considerable time. I have seen young birds nearly fledged on the 27th of October, and have obtained fresh eggs on the 15th of January. This bird digs out a hole in the soft soil on the faces of the cliffs, also in the sand on flat ground. Some of the burrows are six feet and more in length. The bird also lays extensively on Philip Island in shallow recesses under overhanging boulders and in colonies, *i. e.* many may be found close together. On Norfolk Island its holes are always isolated and the burrows deep. One egg only is laid. Both bird and egg have a very strong peculiar smell, and I can usually tell a fresh hole from an old one by the smell of the entrance. There is no nest. The eggs, which are pure white, vary from 2·5 inches to 2·75 in length, and from 1·5 inch to 1·75 in breadth. Some are equally rounded at both ends; others are much pointed at one end.

PUFFINUS ASSIMILIS, Gould.

Of this bird, the Norfolk-Island name of which is "Lao," I know but little. The eggs are white and like those of the Mutton-bird, but smaller. The egg is laid in a recess or shallow hole under an overhanging rock, but always, I believe, on sand. There is no nest, and one egg only is laid. I have seen only three birds of this species, and found one egg myself in a solitary recess on sand under an overhanging rock. The bird was very shy. I believe this species to be scarce here. It breeds on Philip and Nepean Islands and on outstanding rocks. The single egg which I found measures 2·1 inches in length by 1·3 in breadth; it is long and narrow, and more or less pointed at both ends.

SULA PERSONATA, Gould.

This Gannet breeds on Nepean and Philip Islands, but not on Norfolk Island. It makes no nest, except that it sometimes places a few dry grass-stalks or rushes under its eggs. As a rule the eggs are laid on the ground, and are usually two in number. This is the only sea-bird breeding on these islands that lays more than one egg.

The Gannet commences laying certainly in the earlier part of October, as I have seen a young bird upwards of a week old on the 27th of that month. I have also obtained a fresh egg in the first week of January. The young Gannet is, when fledged, much darker in colour on the wings and back than the parent. The old birds are very tame, and have to be driven off their eggs, but they peck sharply at intruders with their formidable beaks. The eggs vary from 2·5 inches to 2·75 in length, and from 1·75 to 1·9 in breadth. They have a greenish-white ground-colour and chalky-white coating, like those of the Common Gannet. Some specimens are much stained with brown colouring-matter, probably derived from the nest-materials or the soil on which they are laid.

Other Norfolk-Island birds sent by Mr. Metcalfe, and identified for me by Mr. Sharpe are:—*Petrœca multicolor* (Gm.); *Eudynamys taitensis* (Sparrm.); *Ninox maculata* (Vig.); *Aplonis fuscus*, Gould; *Ægialitis bicincta*, Jerd.; *Porphyrio melanotus*, Temm.; *Rhipidura pelzelni*, Gm.; *Zosterops tenuirostris*, Gould; *Gerygone modesta*, Pelz.; *Symmorphus leucopygius*, Gould; and *Pachycephala xanthoprocta*, Gould. I hope in time to have sufficient materials for a paper on the land-birds of Norfolk Island.

XXIV.—*On the Cormorants of Japan and China.*

By Henry Seebohm.

The numerous collections of Japanese birds recently sent to this country have enabled me to amass a series large enough to clear up some of the difficulties which have hitherto presented themselves in an attempt to unravel the tangle into which the Cormorants of China and Japan have fallen.

Temminck and Schlegel, in the 'Fauna Japonica,' enumerate three:—

1. *Carbo cormoranus.*
2. ,, *filamentosus* vel *capillatus.*
3. ,, *bicristatus.*

The second in this list bears the former name in the text, and the latter on the plates; but Schlegel, in his 'Muséum d'Histoire Naturelle des Pays-Bas,' gave up the species (incorrectly, as I hope to show presently), and treated both names as synonyms of the Common Cormorant.

Swinhoe accepted Schlegel's union of No. 1 and No. 2 under the name of *Phalacrocorax carbo*, and in 1871 called No. 3 *Graculus bicristatus*, after having in 1867 described it as new under the name of *Phalacrocorax æolus*; but in 1874 he identified this supposed new species as *P. pelagicus*.

The conclusions at which I have arrived are that there are three Cormorants found in China and Japan.

PHALACROCORAX CARBO.

The Common Cormorant appears to breed in Japan and North China and to winter in South China. It may at once